BERUCHASHVILI, L.Z. (Yerevan)

Sleep therapy in craniocerebral trauma. Vop.neirokhir. 20 no.2:49-51 Mr-Ap '56. (MLRA 9:7)

(SLEEP, ther. use
brain inj.)
(BRAIN, wounds and inj.)
ther., sleep)
(WOUNDS AND INJURIES
brain, ther., sleep)

BERUCHASHVILI, L.Z. (Tbilisi)

Observation of cysticercosis of the fourth ventricle. Vop. neirokhir. 21 no.6:48-49 N-D '57. (MIRA 11:2)
(CEREBRAL VENTRICLES, dis.
cysticercosis of IV. ventricle, diag.)
(CYSTICERCOSIS, diag.
IV. ventricle of brain)

BERUCHASHVILI, L. Z., Cand Med Sci -- (diss) "Problem of the plastic closure of cranial defects with acrylic plastics. (Clinicoexperimental research)." Tbilisi, 1960. 23 pp; (Tbilisi State Medical Inst); 100 copies; free; (KL, 29-60, 127)

YEFREMOV, A.V.; BERUCHASHVILI, L.Z.

Eosinophilic granuloma of the bones of the skull. Vop. neirokhir 24 no. 2:47-51 Mr-Sp '60. (MIRA 14:1)
(SKULL—DISEASES) (EOSINOPHILIC GRANULOMA)

BERUCHEV, G. . .

Beruchev, G. M.

"Some Problems in the Theory of Interaction of Flood Currents with Equipment." Georgian Sci Res Inst of Hydraulic Engineering and Soil Improvement (GruzNIIGiM). Tbilisi, 1955. (Dissertation for the Degree of Candidate in Technical Sciences).

SO: Knizhnaya Letopis', No. 27, 2 July 1955.

BERUCHEV, G.M.

Some aspects of the violent flow of torrential floods. Soob. AN Gruz. SSR 19 no.5:529-536 N '57. (MIRA 11:6)

1.Gruzinskiy gosudarstvennyy proyektnyy institut vodokhozyaystvennogo stroitel'stva. Predstavleno akademikom K.S. Zavriyevym.
(Hydrodynamics) (Floods)

BERUCHEV, G. M. , Cand of Tech Sci -- (diss) "Certain Problems of the Theory of Flood Torrents with Construction," Moscow, 1959, 19 pp (All-Union Scientific Research Institute of Transportation Construction) (KL 4-60, 118)

BERUCHEV, G.M.; BEGISHVILI, K.R.; FLEYSHMAN, S.M.

Main types of flash floods and peculiarities of structural mud floods. Izv. AN SSSR. Ser. geog. no.6:24-28 N-D '60. (MIRA 13:10)

1. Gosudarstvennyy institut proyektirovaniya vodnogo khozyaystva GruzSSR, Gruzinskiy pedagogicheskiy institut im. A.S. Pushkina i Nauchno-issledovatel'skiy institut transportnogo stroitel'stva. (Floods)

COUNTRY : USSR M
CATEGORY : CULTIVATED PLANTS. Grains. Leguminous Grains. Tropical Cereals.
ABS. JOUR. : Ref Zhur - Biologiya, No. 4, 1959, No. 15609

AUTHOR : Boruchev, P.P.
INST. : Stalingrad Agric. Inst.
TITLE : Study of Methods of Controlling Oversized Grain in Corn.

ORIG PUB. : V sb.: Kul'tura kukuruzy v SSSR. M., "Sov. nauka", 1957, 45-50

ABSTRACT : Experiments were conducted by the Stalingrad Agricultural Institute in 1955 in chestnut, sandy, saline soil in the following variants: variant I -sowing of corn 15 days later than the basic farm sowing, II - sowing simultaneously with the main sowing of late-maturing (Rosenbergskaya, Minnesota 13) and III - sowing at one time with the main sowing of plants of the same sort, but with placing the seed 5 cm deeper than the main. The least percentage of oversize grains is in the first experiment variant. An effort is made to substantiate the difference in variants obtained in experiments.

CARD: -- A.F. Khlystova

BERUCHKA, Yu.I.

Determining errors of the mean square deviation of star tremors from observations of star trails. Izv.GAO 21 no.6:30-38 '60. (MIRA 13:9)

(Stars--Observation)

BRATIYCHUK, M.V.; BELENKO, V.I.; KRYLOV, A.G.; SENTSOVA, Yu.Ye.; YUREVICH, V.; TUMANYAN, B.Ye.; KHARIN, B.T.; CHERVYAKOVA, A.F.; BKRUCHKA, Yu.I.; PLUZHNIKOV, V.Kh.; SHILKINA, Z.A.

Results of photographic observations of artificial satellites. Biul.sta.opt.nabl.isk.sput.Zem. no.28:16-30 '62. (MIRA 15:12)

1. Nachal'nik Uzhgorodskoy stantsii nablyudeniya iskusstvennykh sputnikov Zemli (for Bratiychuk). Stantsiya Astronomicheskogo soveta AN SSSR (for Belenko, Krylov, Sentsova, Yurevich, Shilkina). 3. Nachal'nik Yerevanskoy stantsii nablyudeniya iskusstvennykh sputnikov Zemli (for Tumanyan). 4. Nachal'nik Stantsii nablyudeniya iskusstvennukh sputnikov Zemli pri Tomskom gosudarstvennom universitet (for Kharin). 5. Nachal'nik stantsii No.074, Instituta astrofiziki AN Turkmenskoy SSR (for Chervyakova). 6. Nachal'nik stantsii nablyudeniya iskusstvennykh sputnikov Zemli Astronomicheskoy observatorii Khar'kovskogo universiteta (for Pluzhnikov).

(Artificial satellites—Tracking)

BERUCHKO, V.V.

21 (7), 21 (8)

AUTHOR: Rudakov, V. P.

SOV/89-7-1-18/26

TITLE: IX All-Union Conference on Nuclear Spectroscopy (IX Vsesoyuznoye soveshchaniye po yadernoy spektroskopii)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 1, pp 76-79 (USSR)

ABSTRACT: The IX All-Union Conference was held from January 26 to February 2, 1959 at Khar'kov. More than 300 participants heard 100 lectures, the most important of which dealt with the following fields. Nuclear Theory. General problems of β-decay. A. S. Davydov (MGU): Theoretical classification of low-energy excited nuclear states. L. K. Peker: Deformed nuclei. [illegible] Gibraim, L. K. Peker, L. A. Sliv (LFTI): Quadrupole oscillations of deformed nuclei. Ye. V. [illegible], V. [illegible], S. P. Tsytko (KhFTI): Calculation of the ft-values with matrix elements for β-transitions by means of the generalized nuclear model. S. T. Belyayev (IAE): Consideration of pair-correlation in nuclei. A. B. Migdal (IAE): The application of the superconductivity model to nuclei for the purpose of calculating their moments of inertia. F. E. Yastrevskiy (IAE): Problems of the neutron stability of nuclei. [illegible] (IAE): The present stage in the theory of β-decay. [illegible]

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V. K. Grigor'yev, V. A. Tergakov, Yu. V. Trebukhovskiy (ITEF): Measurement of the angular correlation between electron and neutrino in the decay of the neutron. V. M. Lobashev, V. A. Nazarenko, L. I. [illegible] (LFTI): Measurement of the correlation between the transversal electron polarization and circular polarization of γ-quanta occurring in the decay of Sc^{46} and Co^{60}. Decay Schemes. γ-radiation of Nuclei. [illegible] Amufriyev, A. K. Val'ter, Yu. V. Gonchar, Ye. [illegible], A. N. L'vov, P. M. Tutakin, S. P. Tsytko, P. V. Sorokin, A. S. [illegible], I. Ya. Malakhov, A. [illegible] (Fiziko-tekhnicheskiy Khar'kovskiy institut (Physico-technical Institute, Khar'kov)): The $Si^{28,29,30}(p,\gamma)$, $Ne^{20}(p,\gamma)$, $S^{32,34}(p,\gamma)$, $Ar^{40}(p,\gamma)$ and $N^{14}(p,\gamma)$ reactions. D. G. Alkhazov, A. P. Grinberg, G. M. [illegible], M. Kh. Lemberg, V. V. Rozhdestvenskiy, [illegible] of the Leningradskiy fiziko-tekhnicheskiy institut (Leningrad Physico-technical Institute). Investigation of the Coulomb excitation of the lower levels of some nuclei during their bombardment by multiply charged ions (C, N, O, and Ne). A. T. Kalyamin, A. V. Murin, B. K. Pokrovskiy, V. A. Yakovlev (RIAN): New isotopes Tu^{161}, Ho^{153}, Ho^{155} and Ho^{157}. B. S. Dzhelepov, V. A. Sergiyenko (LGU): Decay schemes of some neutron-deficient isotopes, set up on the basis of measurements of the coincidence of the internal conversion electrons. Spectroscopy Engineering. B. S. Dzhelepov, N. P. [illegible], V. [illegible], V. G. Chumin (RIAN): β-spectrometer with double focusing. S. A. Baranov, V. V. [illegible], A. G. Zelenkov, A. F. Malov, V. Ya. Shchepkin (IAE): Improved α-spectrometer. [illegible] Barchuk, A. V. Belyak, V. I. Gol'dshtein, [illegible] (IYAN UkrSSR): Magnetic spectrograph for heavy charged particles. The representatives of the Ministerstvo radiotekhnicheskoy promyshlennosti (Ministry of the Radio-engineering Industry) gave a report about new multipliers. The Conference was closed by B. S. Dzhelepov who stressed the fact that nuclear tables and reference works ought to be published much more quickly in order to be of real use to the experimenter.

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21(10), 21(8) SOV/89-7-3-14/29

AUTHORS: Baranov, S. A., Zelenkov, A. G., Shchepkin, G. Ya., Beruchko, V. V., Malov, A. F.

TITLE: A Large α-Spectrometer

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 3, pp 262-264 (USSR)

ABSTRACT: This article is based on of a lecture delivered at the 9. All-Union Congress of Nuclear Spectroscopy (Khar'kov, January 1959). The spectrometer developed belongs to the $\pi\sqrt{2}$-type, in which, for the purpose of improving light intensity accompanied by a high degree of resolving power, the radius of the central orbit was considerably enlarged (155 cm). The magnet has the shape of a mushroom and is composed of 3 parts: the core, a cylindrical part, and 2 "hats" (photograph attached). The width of the poles is $\sim$70 cm, the distance between them is 35 cm, and the total weight is 90 t. Profiled end pieces are fastened to the pole shoes, their form is calculated by means of an analytical method. The operation chamber has a content of $\sim$1000 l. Evacuation is brought about by means of a VN-2 forepump. As a high-vacuum pump a VH-54-type unit is used. The operating vacuum amounts to some 10^{-6} torr. It is possible to measure 4 α-active pre-

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parations successively without the vacuum being influenced. The maximum size of the source is 100 . 10 mm. Recording of the α-particles is carried out either by means of a proportional counter or by means of thick-layered photo-plates. The magnetic field coils are fed by a selenium rectifier, which is, in turn, connected with a 35 kva motor generator by way of a DN-35 choke. Within the operational range of the device a current of 700-1300 a flows, which corresponds to a field strength of 2.0—3.5 kOe. Stabilization of the magnetic field is described more closely by reference 6. During the measurement the maximum deviation of the magnetic field from the previously adjusted value is less than 2.10^{-4} in the course of 8 hours of perpetual operation. The topography of field distribution was experimentally investigated with great exactitude. Boundary effects were eliminated in accordance with reference 7. On the basis of the topography it was possible to determine the shape of the diaphragms by which the α-beam is bounded. The maximum utilized solid angle of the device is 8.10^{-4} of 4π. The half width of the lines amounts to some hundredth parts of a percent. The dispersion of the device for the α-particles of Po^{210} was measured: 1.2 kev/mm. The α-sources may have a weight of up to 100 μg. Long-lived α-radiation sources with a half life of up to 2.10^{10} a still

give useful measuring results. There are 2 figures and 7 references, 2 of which are Soviet.

SUBMITTED: May 8, 1959

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B006/B060

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AUTHORS: Baranov, S. A., Zelenkov, A. G., Shchepkin, G. Ya., Beruchko, V. V., Malov, A. F.

TITLE: A Large α-Spectrometer With Double Focusing

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol. 23, No. 12, pp. 1402 - 1410

TEXT: The present paper offers a description of an efficient α-spectrograph ($\pi\sqrt{2}$ - focusing), devised by the authors for the microscopic investigation of the α-decay. The magnetic field distribution in the gap may be approximated by the series $H/H_0 = 1 + a_1\eta + a_2\eta^2 + a_3\eta^3 + \ldots$, where H_0 denotes the field in the central orbit with the curvature radius ϱ_0; $\eta = \frac{\varrho-\varrho_0}{\varrho_0}$. The coefficients of the expansion were chosen to be $a_1 = -1/2$, $a_2 = 1/8$, $a_3 = 3/16$. ϱ_0 was chosen to be 155 cm to allow for the highest possible resolving power of the device and maximum light intensity. The

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device, weighing 90 t, consists mainly of the magnet with the excitation winding and of the vacuum chamber placed into the gap between the poles. The width between the poles is ~70 cm, the gap width between them is 35 cm. Fig. 1 shows a picture of the complete equipment. Fig. 2 shows a cross-section through the magnet. Pressure reduction down to the magnitude of 10^{-6} torr was rendered possible by the connection of the chamber (~1000 l) to a forepump of type VN-2 and to a vacuum unit VA-5-4. Fig. 3 shows a cross-section through the complete spectrometer. The sources (maximum dimensions: 100·10 mm) were placed in a special device. Three similar diaphragms served for the limitation of the α-beam. The diaphragms are placed in the central part of the chamber (under angles of 100, 130, and 160°), where the beam has the maximum cross-section. The measuring of the α-beam is carried out by means of a proportional counter or by thick-layered photographic plates. Simultaneously a set of plates with a total area of 480·90 mm may be exposed. Fig. 4 shows the supply of the magnet schematically. The water-cooled magnet winding consists of a copper bar (170·10 mm cross-section) and has 53 turns. The working current intensity is 700-1300 a, corresponding to a field potential of 2.0 - 3.5 koe. More

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details are given in the connection. Fig. 5 shows a scheme of the system, briefly discussed, for the stabilization of the magnetic field. The H-measurement is carried out by means of the paramagnetic proton resonance. A 0.5% aqueous solution of manganese chloride was used for transmission. The solution filled in a vacuum pocket was directly placed in the magnet gap. The block diagram of the field meter is discussed and shown in Fig. 6. The error of this meter amounts to $1 \cdot 10^{-5}$. The investigation of the magnetic field topography is discussed next. For this purpose two devices were developed, one basing on the signal measurement by means of a ballistic galvanometer, the other basing on a signal compensation. Both devices were very sensitive (~0.05 oe/mm). Results may be seen in Fig. 8 and in a table. More accurate data will be supplied in another paper. Finally the ion-optical properties of this device are discussed. Fig. 9 shows the shape of the focal surface. The energy range $\Delta E/E_o$ of the α-particles was ~10% and was simultaneously recorded by photographic plates. The half-width of the lines within the whole range, was ~0.07. The dispersion dE/dx was $\approx 2.28 \cdot 10^{-4} E_o$/mm. This comes up to ~1.2 kev mm^{-1} for Po^{210} α-particles. The resolving power of the device is illustrated by the

α-spectrum of Cm^{242}, shown in Fig. 10. Finally the authors thank the following persons for interest and assistance: I. V. Kurchatov, L. A. Artsimovich, V. Z. Bychkov, A. M. Barinov, I. V. Naumov, S. M. Rubchinskiy, M. P. Zel'dovich, V. V. Zhukov, N. N. Semashko, D. V. Pavlov, A. A. Nikulichev, V. M. Kulakov, A. A. Arutyunov, S. N. Belen'kiy, A. I. Timoshinov, A. D. Runov, I. Ya. Leskov, and M. I. Dmitruk. There are 10 figures, 1 table, and 13 references: 6 Soviet.

BERUCHKO, V.V.

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24.6400

AUTHORS: Baranov, S. A., Zelenkov, A. G., Shchepkin, G. Ya., Beruchko, V. V., and Malov, A. F.

TITLE: A big alpha spectrometer with double focusing

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 23, no. 12, 1959, 1402-1410

TEXT: The present paper was the topic of a lecture read at the 9th All-Union Conference on Nuclear Spectroscopy (Khar'kov January 26 till February 2, 1959). Since all existing magnetic alpha spectrometers show a relatively low light intensity, the authors have developed a big (radius of the central orbit: $\varrho_0 = 155$ cm) alpha spectrometer having a high resolution and maximum light intensity. It is described here. The instrument has a $\pi\sqrt{2}$ focusing and has been specially developed for microscopic studies of the α-decay. The magnetic field in the gap may be described by the series $H/H_0 = 1 + a_1\eta + a_2\eta^2 + a_3\eta^3 + \ldots$, where H_0 represents the field in the central orbit and $\eta = (\varrho - \varrho_0)/\varrho_0$. $a_1 = -1/2$, $a_2 = 1/8$ and

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A big alpha spectrometer with double focusing

$a_3 = 3/16$ were chosen. The pole pieces measured about 70 cm in width and had a gap of 35 cm. The components of the magnet had been machined accurately to 0.2 mm. The pole pieces had a special profile. The chamber had a capacity of about 1000 liters and was evacuated by a fore pump of type BH-2 (VN-2) and a vacuum unit of type BA-5-4 (VA-5-4) (pressure: several 10^{-6} mm Hg). Fig. 2 shows a cross section of the magnet and Fig. 3 that of the spectrometer. The sources (maximum size: 100·10 mm) were located in a separate unit. The alpha beam was bounded by three similar diaphragms located in the central part of the chamber (at the following angles: 100, 130 and 160°; at these angles, the beam showed a maximum cross section). Another three diaphragms prevented scattering. The alpha particles were recorded by a proportional counter or thick-layered photographic plates. A set of plates having a total area of 480·90 mm can be exposed at one time. The plates are contained in a special case which makes it possible to expose four sets of plates successively. Fig. 4 shows the power supply of the magnet. The coil (with a copper core of 170·10 mm cross section) consists of 53 turns and is water-cooled. 700-1300 a will generate a field of 2.0-3.5 koe. Fig. 5 schematically shows a device used

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A big alpha spectrometer with double focusing

to stabilize the magnetic field. The field strength was measured by employing the proton paramagnetic resonance. A 0.5 % aqueous solution of manganese chloride was used for transmission. Fig. 6 shows the block diagram used for field measurement, which operated with an error of $\pm 1 \cdot 10^{-5}$. Special attention was paid to the study of the field distribution in the gap and to the topography of the field. Two instruments were employed to determine the topography: One was based on signal measurement with a ballistic galvanometer and the other on signal compensation. Both instruments were very sensitive (≈ 0.05 oe/mm). The measured and calculated field distributions can be seen in the Table. Finally, the ion-optical properties of this instrument are discussed. The energy range $\Delta E/E_o$ of the alpha particles was ~ 10 % and was recorded simultaneously by photographic plates. The half-width of the lines was ≈ 0.07 % over the whole range. The dispersion dE/dx was $\approx 2.28 \cdot 10^{-4}$ E_o/mm; this comes up to ≈ 1.2 kev/mm for Po^{210} alpha particles. The resolution of this spectrometer is illustrated by the alpha spectrum of Cm^{242}. The authors thank I. V. Kurchatov, L. A. Artsimovich, V. Z. Bychkov, A. M. Barinov,

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A big alpha spectrometer with double focusing

I. V. Naumov, S. M. Rubchinskiy, M. P. Zel'dovich, V. V. Zhukov, N. N. Semashko, D. V. Pavlov, A. A. Nikulichev, V. M. Kulakov, A. A. Arutyunov, A. N. Belen'kiy, ... I. Timoshinov, A. D. Runov, I. Ya. Leskov and M. I. Dmitruk for help and interest. There are 10 figures, 1 table, and 13 references: 7 Soviet-bloc and 6 non-Soviet-bloc.

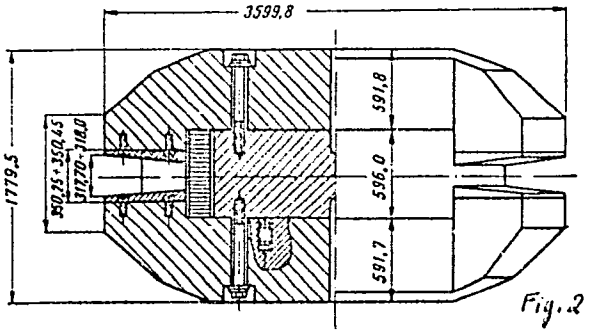

Fig. 2

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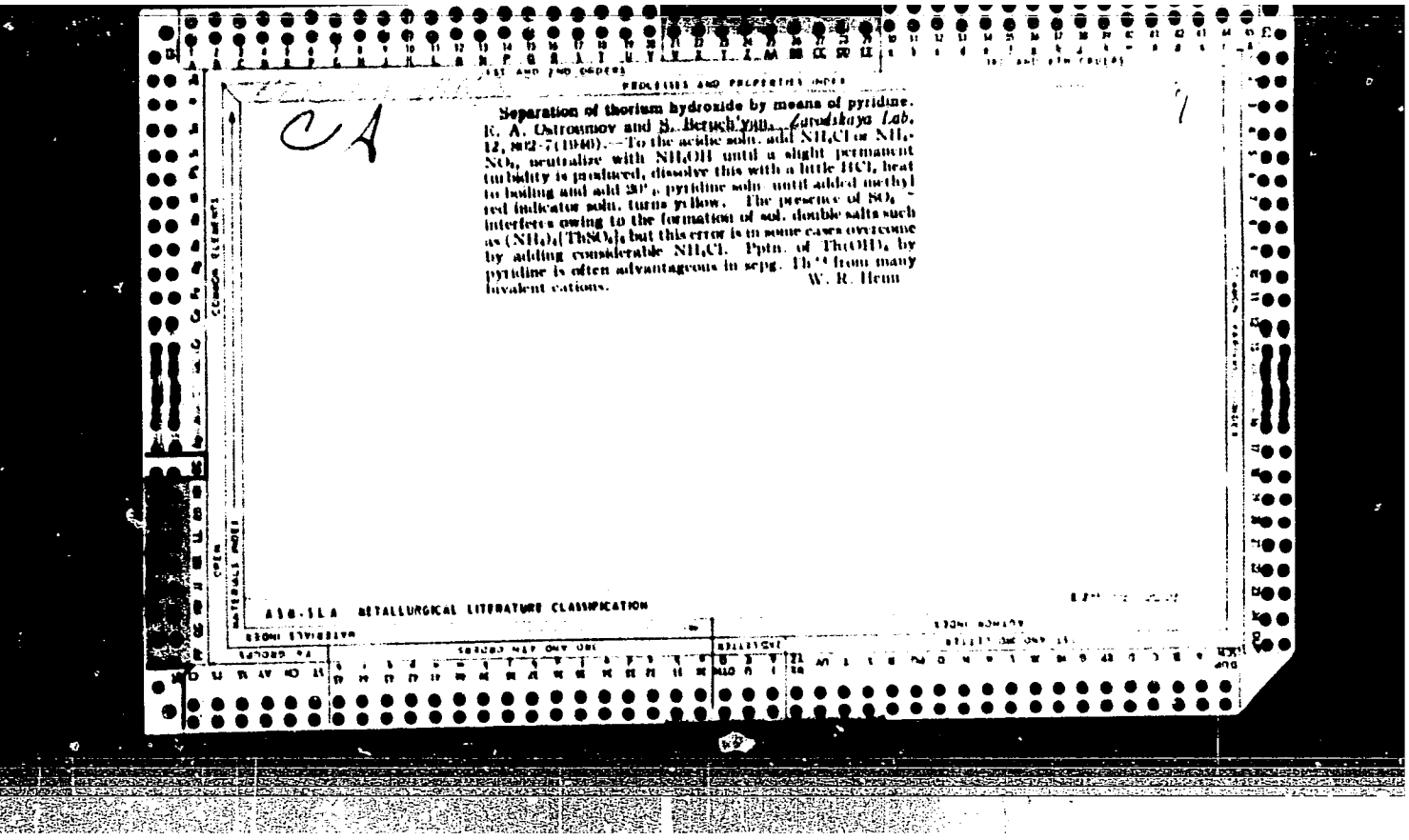

CA

Separation of thorium hydroxide by means of pyridine. R. A. Ostroumov and S. Berach'yan. *Zavodskaya Lab.* 12, 802-7 (1940).—To the acidic soln. add NH_4Cl or NH_4NO_3, neutralize with NH_4OH until a slight permanent turbidity is produced, dissolve this with a little HCl, heat to boiling and add 20% pyridine soln. until added methyl red indicator soln. turns yellow. The presence of SO_4^{--} interferes owing to the formation of sol. double salts such as $(NH_4)_4[Th(SO_4)_4]$ but this error is in some cases overcome by adding considerable NH_4Cl. Pptn. of $Th(OH)_4$ by pyridine is often advantageous in sepg. Th from many bivalent cations.

W. R. Henn

A56-11A METALLURGICAL LITERATURE CLASSIFICATION

BERUCH'YAN, S. A.

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Защ. 1957, 29.6.

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Защ. 1956, 29.5.

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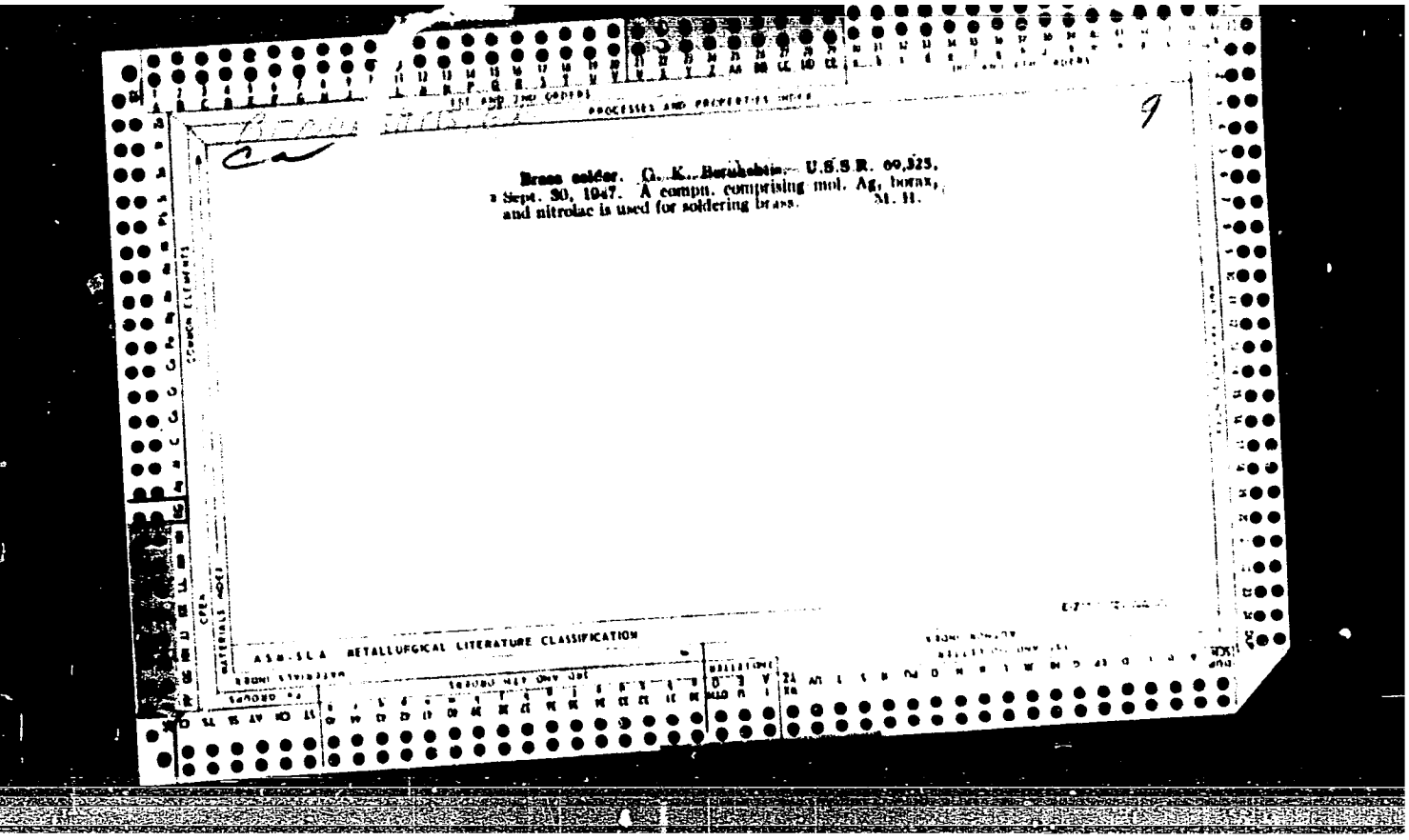
706

Dissertation for degree of

Candidate Chemical Sciences

SAVEL'YEV, V.P.; KOVAL'SKAYA, A.V.; BERUKOV, F.V.; GALKIN, Yu.P.; KROKHOTIN, A.I.; SINEGUBKIN, V.V.; EPSHTEYN, A.L.; TSIRKIN, M.Z.; LAVRUSHINA, N.S.; GUBAREV, A.A.; KONTOROVICH, L.M.; KOROLEV, V.N.; USTIMENKO, I.L.; KUDNAKOV, S.N.; POLUSHKIN, M.K.; LIBE, N.A.; IVANOV, N.P.; D'YACHENKO, G.I.; FILIPPOV, I.F.; KHUTORETSKIY, G.M.; VARTAN'YAN, G.P.; RUSOV, Ye.Kh.; BARKAN, L.Z.; KOLOMSKAYA, L.M.; GORBATENKO, F.I.

Inventions. Energ. i elektrotekh. prom. no.4:39 O-D '62.
(MIRA 18:3)



Brass solder. G. K. Burakshtein. U.S.S.R. 69,525, Sept. 30, 1947. A compn. comprising mol. Ag, borax, and nitrolac is used for soldering brass. M. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

USSR/Corrosion - Protection from Corrosion, J

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63862

Abstract: model are the carefully ground end surfaces of the plates, the sides and opposite end-surfaces of the plates being insulated. When a film of moisture is formed on the working surface of the instrument a difference in potential arises between cathode and anode plates, and a current begins to flow. The instrument registers currents arising not only on a visible moisture deposit formation at the surface of the electrodes but also those resulting from the formation of a moisture film due to an adsorption of water vapor. Corrosive properties of the atmosphere and their changes with time can be characterized on the basis of the corrosion current magnitude, which is registered periodically by the galvanometer or is constantly recorded by the automatic recording device.

Card 2/2

SOV/137-58-8-17369

Translation from: Referativnyy zhurnal, Metallurgiya 1958, Nr 8, p 168 (USSR)

AUTHORS: Tomashov, N.D., Berukshtis, G.K.

TITLE: A Method for the Determination of the Corrosive Activity of the Atmosphere (Metod opredeleniya korrozionnoy aktivnosti atmosfery)

PERIODICAL: Tr. In-ta fiz. khimii, AN SSSR, 1957, Nr 6, pp 50-55

ABSTRACT: The device is assembled of 30 Cu and 30 Fe plates, separated from each other by cigarette paper impregnated with bakelite varnish. Upon the formation on the device of a film of moisture it produces in the outer circuit a current registered by a recording microamperemeter. The instrument permits the registration of the total corrosion current circulating on the surface of the device upon the formation of adsorption films and likewise upon the formation of visible films of water. Experiments performed for the explanation of the effect of the products of corrosion on the work of the device showed that the maximum corrosion current and the amount of corrosion undergo sharp variations only at the beginning, then, proportionally to the thickening of the film of the corrosion products, their

Card 1/2

SOV/137-58-8-17369

A Method for the Determination of the Corrosive Activity of the Atmosphere

protective properties do not vary any more, and the operation of the device stabilizes. The corrosion products forming also affect the kinetics of the electrode processes. With the aid of the device described the variation in the current upon the drying of the moisture films formed during rain or the condensation of dew was studied. It is demonstrated that the maximum current corresponds to the complete disappearance of the visible water film, while a sharp decrease in the current intensity occurs on drying of the corrosion products. The device can be used in open air and in storage buildings.

K.Zh.

1. Atmosphere—Corrosive effects
2. Machines--Performance
3. Corrosion—Test methods

Card 2/2

SOV/137-59-3-7126

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 313 (USSR)

AUTHOR: Berukshtis, G. K.

TITLE: Corrosion Tests of Electroplating Under Natural Conditions (Naturnyye korrozionnyye ispytaniya galvanicheskikh pokrytiy)

PERIODICAL: Sb Kom-t po korrozii i zashchite metallov Vses. sov. nauchno-tekhn. o-v, 1958, Nr 3, pp 11-18

ABSTRACT: It was established that meteorological data (humidity, amount of precipitation, and temperature) are insufficient for determining the mean atmospheric corrosion rate. The mean corrosion rate is directly proportional to the length of exposure of an electroplated surface to moisture. Data are adduced on the rates of corrosive attack on Zn, Cd, and Cr plating and three-layer Cu-Ni-Cr plating in a subtropical climate, as well as data on corrosion rates in air contaminated with SO_2 and in a northern coastal region. Comparison is made between the climatic characteristics of the corrosion observatories of the IFKh, Academy of Sciences, USSR, and the climatic characteristics of various regions of India.

N. L.

Card 1/1

[redacted], S.F., Cand Chem Sci -- (diss) "Effect of external factors on the corrosion of metals in the ocean." Mos, 1958, 17 pp (Acad Sci USSR. Inst of Physical Chemistry) 150 copies (KL, 27-58, 103)

BERUKSHTIS, G.K.

TOMASHOV, Nikon Danilovich. Prinimali uchastiye: TYUKINA, M.N.; PALEOLOG, Ye.N.; CHERNOVA, G.P.; MIKHAYLOVSKIY, Yu.N.; LUNEV, A.F.; TIMONOVA, M.A.; MODESTOVA, V.N.; MATVEYEVA, T.V.; BYALOBZHESKIY, A.V.; ZHUK, N.P.; SHREYDER, A.V.; TITOV, V.A.; VEDENEYEVA, M.A.; LOKOTILOV, A.A.; BERUKSHTIS, G.K.; DERYAGINA, O.G.; FEDOTOVA, A.Z.; FOKIN, M.N.; MITOLYUBOV, Ye.N.; ISAYEV, N.I.; AL'TOVSKIY, R.M.; SHCHIGOLEV, P.V.. YEGOROV, N.G., red.izd-va; KUZ'MIN, I.F., tekhn.red.

[Theory of the corrosion and the protection of metals] Teoriia korrozii i zashchity metallov. Moskva, Izd-vo Akad.nauk SSSR, 1959. 591 p. (MIRA 13:1)
(Corrosion and anticorrosives)

85546

S/081/60/000/020/008/014
A006/A001

18.8300 1506

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 20, p. 295, # 81439

AUTHORS: Tomashov, N.D., Berukshtis, G.K. 19

TITLE: A Method of Determining the Rate of Corrosion Processes Under Thin Electrolyte Films 18

PERIODICAL: Tr. In-ta fiz. khimii, AN SSSR, 1959, No. 7, pp. 5-10

TEXT: The authors describe a new electrochemical method of determining the corrosion rate from the magnitude of current on the model of a micro-corrosion element, assembled from thin dissimilar metal plates having different electrochemical potentials and serving as cathodes and anodes. The anode and cathode plates, alternating in the packet, are insulated from each other by a varnish or mica layer. The operating surface of the model is formed by the well-polished faces of the metal plates and the insulation. The conventional thickness of the metal plates is $\sim$ 0.5 mm, and that of the insulation is 30 - 50 μ. Contact panels are arranged on the lower section of the packet, connected with the model anodes by conductors; all the cathodes are parallel switched to one common conductor.

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85546

S/081/60/000/020/008/014
A006/A001

A Method of Determining the Rate of Corrosion Processes Under Thin Electrolyte Films

This method of switching makes possible to switch off any number of electrodes in case of necessity and to change the correlation of the cathode and anode surfaces of the model. It is shown that this method makes possible the study of basic regularities: the effect of temperature, concentration and composition of the electrolyte, and the intensity of mixing the medium, on the corrosion rate in adsorption and visible moisture films and in the electrolyte volume; the method can be used to investigate the corrosion rate under various conditions.

A. Moskvicheva

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

S/137/61/000/010/044/056
A006/A101

AUTHORS: Klark, G.B., Berukshits, G.K. Mikhaylovskaya, M.I.

TITLE: Corrosion stations of the Institute of Physical Chemistry, AS USSR

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 10, 1961, 43, abstract 101308 ("Tr. In-ta fiz. khimii, AN SSSR", 1960, no. 8, 5 - 13)

TEXT: A map is presented showing the location of corrosion stations of the Institute of Physical Chemistry, AS USSR. Graphs are given of temperature changes, air moisture, the number of days with dew and fog, the amount of precipitations, the velocity of wind and the number of bright days within the location range of the stations. There are 8 references.

Ye. Layner

[Abstracter's note: Complete translation]

Card 1/1

S/137/61/000/010/043/056
A006/A101

AUTHORS: Berukshtis, G.K., Klark, G.B.

TITLE: Methods of investigating atmospheric corrosion at corrosion stations

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 10, 1961, 43, abstract 101307 ("Tr. In-ta fiz. khimii AN SSSR", 1960, no. 8, 41 - 55)

TEXT: A description is given of the equipment used for studying corrosion at various corrosion stations. Photographs are presented of stands, an atmospheric booth, and a number of specimens in the form of strip and wire for corrosion tests. The investigation of atmospheric corrosion was carried out parallel with metecrological observations and an analysis of the air at corrosion stations. Problems are discussed which are connected with the selection of the shape, dimensions and number of specimens; the manufacture of specimens, the application and quality control of coatings, and the arrangement of the specimens on the stands. The corrosion resistance of metals of galvanic and other coatings is evaluated from changes in the appearance of the specimens, their weight, mechanical and electric properties, and the depth of the corrosion attack on the metal

Card 1/2

Methods of investigating atmospheric corrosion ...

surface. Schemes of devices are given to determine the depth of the corrosion attack, the electric properties of the films on the metal, and to plot curves of cathodic or anodic polarization. Methods are described for the removal of corrosion products. There are 6 references.

Ye. Layner

[Abstracter's note: Complete translation]

Card 2/2

TOMASHOV, N.D.; BERUKSHTIS, G.K.

Determining the rate of atmospheric metal corrosion by meteorological characteristics. Trudy Inst.fiz.khim. 8:69-83 '60. (MIRA 14:4)

(Corrosion and anticorrosives--Climatic factors)

S/137/61/000/006/087/092
A006/A101

AUTHOR: Perukshtis, G.K.

TITLE: Factors determining the atmospheric corrosion rate of galvanic coatings on steel

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1961, 51, abstract 61400 ("Tr. In-ta fiz. khimii, AN SSSR, 1960, no. 8, 130 - 143)

TEXT: In the case when the coating has a more negative potential than the metal to be protected, the corrosion rate is determined by the efficiency of the function of proper microscopic pairs on the metal. If the metal of the coating has a more positive potential, then the coating suffers mechanical failure due to accumulation of corrosion products of the metal to be protected under the coating. To raise the protective properties of galvanic coatings, it is recommended to develop continuous phase layers on the surface of the coating (e.g. by chromizing or parkerizing). This is done, if the coating is an anodic one in respect to the metal to be protected. To raise the protective properties of multi-layer coatings,

Card 1/2

Factors determining the atmospheric corrosion rate ...

which are cathodic in respect to the metal to be protected, porosity should be reduced, in particular, of the upper layer of the coating.

Ye. Layner

[Abstractor's note: Complete translation]

Card 2/2

ISAYEV, N.I.; Prinimali uchastiye: MIKHAYLOVSKIY, Yu.N.; BERUKSHTIS, G.K.

Atmospheric corrosion of steel wire reope. Trudy Inst.fiz.khim. 8:144-154 '60. (MIRA 14:4)

(Wire rope--Corrosion)

KUZ'MINA, S.Ya.; BERUKSHTIS, G.K.

Atmospheric stability of lacquer and paint coatings in various climatic regions. Trudy Inst.fiz.khim. 8:181-189 '60.
(MIRA 14:4)

(Lacquer and lacquering)
(Corrosion resistant materials—Climatic factors)

KLARK, G.B.; KOSHELEV, G.G.; BERUKSHTIS, G.K.

Corrosion of metals in contact with building materials. Prom. stroi. 40 [i.e. 41] no.6:27-31 Je '63. (MIRA 16:10)

1. Institut fizicheskoy khimii AN SSSR.

L 28530-66 EWT(m)/EWP(t)/ETI IJP(c) JD/WB/GD

ACC NR: AT6013802 (N) SOURCE CODE: UR/0000/65/000/000/0264/0278

AUTHOR: Strekelov, P. V.; Berukshtis, G. K.

ORG: none

TITLE: Atmospheric corrosion of zinc and cadmium coatings on steel and the coefficients of conversion from the findings of accelerated tests to operating conditions

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2. Moscow, Izd-vo Metallurgiya, 1965, 264-278

TOPIC TAGS: corrosion, zinc, cadmium, metal coating, atmospheric contamination, regional study, test method

ABSTRACT: Natural tests of galvanic Zn and Cd coatings performed over the 1950-1963 period in various climatic regions of the USSR under the auspices of the Institute of Physical Chemistry AS USSR showed that their corrosion rate differs depending on the geographic zone: in the Northern and Central USSR, with their prevailing cold weather, this rate averages 0.4-0.8 μ/year for Zn coatings and 0.6-0.8 μ/year for Cd coatings, whereas in the atmosphere of the humid subtropics (southern Black Sea coast) it averages 1.2 μ/year for Zn coatings and 2.5-3 μ/year for Cd. coatings. In the industrial districts, with their polluted atmosphere, this rate is 4 and 10 μ/year for Zn and Cd coatings, respectively. In this connection, accelerated tests of Zn and

Card 1/2

L 28530-66

ACC NR: AT6013802

Cd coatings were carried out in three chambers: a "heat and moisture" chamber simulating the conditions of the clean atmosphere in the humid tropics; a "sulfur dioxide" chamber simulating the atmosphere over industrial districts; and a "sea mist" chamber simulating the atmosphere of the Baltic Maritime Region. In each chamber the specimens were subjected to cyclic changes in temperature and humidity; in the "sea mist" chamber, moreover, sea mist was simulated by spraying an aerosol with the composition: NaCl 27 g/liter, anhydrous $MgCl_2$ 6 g/liter, anhydrous $CaCl_2$ 1 g/liter, and KCl 1 g/liter. The acceleration of corrosion processes in the chamber was chiefly accomplished by increasing the concentration of active corrosive impurities in the film of moisture wetting the metal surface. It is shown that the relevant conversion coefficient can be estimated from the relation:

$\frac{\Delta K}{\Delta \tau}$, g/($m^2$-year) under natural conditions: $\frac{\Delta K}{\Delta \tau}$, g/($m^2$-year) in accelerated-test chambers, where K is the corrosion rate. A comparison of the findings of natural and accelerated (chamber) tests showed that tests in "sea mist" and "heat and moisture" chambers were qualitatively sufficiently representative of the natural conditions of corrosion whereas tests in the "sulfur dioxide" chamber were too rigorous and inadequately reflected the corrosion behavior of the coatings in natural industrial atmosphere; this can be remedied by introducing the two chief aggressors, Cl^- and SO_2 in more realistic ratios. Orig. art. has: 3 figures, 5 tables.

SUB CODE: [illegible]11,07/20/ SUBM DATE: 19Jul65/ ORIG REF: 002

Card 2/2

L 28540-66 EWT(m)/EWP(t)/ETI IJP(c) JH/JD/WB/GD

ACC NR: AT6013807 (N) SOURCE CODE: UR/0000/65/000/000/0332/0350

58
B+1

AUTHOR: Berukshtis, G. K.; Klark, G. B.

ORG: none

TITLE: Atmospheric corrosion of steel, zinc, cadmium, copper and aluminum in various littoral and continental regions

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2 Moscow, Izd-vo Metallurgiya, 1965, 332-350

TOPIC TAGS: corrosion, atmospheric contamination, steel, zinc, copper, cadmium, aluminum, geographic survey

ABSTRACT: No general theory for the scientific prediction of the rate of atmospheric corrosion of various metals for any arbitrarily taken climatic region has so far been evolved. In this connection, the authors attempted to refine the formula for the mathematical dependence of the rate of this corrosion on external conditions, first derived by N. D. Tomashov and G. K. Berukshtis (Issledovaniya po korrozii metallov. Trudy IFKh AN SSSR, vyp. VIII, 1960, 6, 69), so as to take into account the effect of corrosion products, rainfall precipitation (wetting of surface) and the contamination

Card 1/3

ACC NR: AT6013807

of air by SO_2. Specimens of steel, Cu, Zn, Cd and Al were exposed to open air as well as kept in atmospheric booths under conditions simulating storage in unheated warehouses, in various regions of the USSR. Corrosion rate was determined by weighing the specimens before and after the tests over various periods of time (seasons, 1 year, 2 years, 3 years, 4 years, 5 years), and this was combined with regular meteorological observations (hours of fog and sunshine per year, etc.). The products forming at metal surfaces were analyzed for their content of SO_4^{2-} and Cl^- ions and the duration of the wetting of metal (precipitation in hours per year) was recorded. Findings: the corrosion rate of all the five metals may vary markedly depending on environmental factors: thus, for Moscow (industrial district), with its SO_2-polluted atmosphere, as compared with Zvenigorod (rural district), this rate is 1.5 times as high for steel and Cu, 3 times as high for Zn and Al, and 5 times as high for Cd. Thus, SO_2 is a specific aggressor for nonferrous metals and particularly for Cd. For the Baltic Maritime Region, where the amount of chlorides is 40 times as high as in Zvenigorod (rural district), the corrosion rate of Al and Cu is 22 and 3.7 times, respectively, as high as in Zvenigorod, while for steel, Zn and Cd it is either slightly higher or constant, which indicates that chlorides are specific aggressors for such metals as Al and Cu. In atmospheric booths this corrosion rate is 1-4 times higher for all the 5 metals (except Al, for which it is the same) than in open air. It is shown that it is fundamentally possible to make scientifically

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L 28540-66
ACC NR: AT6013807

substantiated predictions of the rate of metal corrosion. The findings can be utilized by designers to develop protective coatings for parts of devices and equipment, and will be utilized by the authors themselve. efine the coefficients of conversion of the results of accelerated tests to norma operating conditions. Orig. art. has: 7 figures, 7 tables

SUB CODE: 11, 04, 07, 11, 20/ SUBM DATE: 19Jul65/ ORIG REF: 006/ OTH REF: 003

Card 3/3 CC

NAYGUZ, N.I.; BERUL', G.M.

Speed regulator with disconnecting valves for the hydraulic systems of fast-acting presses. Kuz.-shtam. proizv. 1 no.9:23-25 S '59. (MIRA 12:12)
(Hydraulic presses) (Forging machinery)

S/193/60/000/011/006/022
A004/A001

AUTHORS: Berul', G. I., Nayguz, N. I.

TITLE: The П040 (P040) Hydraulic Press for the Reduction of Pipe Ends Prior to Drawing

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, 1960, No. 11, pp. 13-14

TEXT: The Odesskiy zavod pressov (Odessa Press Plant) has designed and manufactured the model P040 hydraulic press, devised for the reduction (tapering) of pipe ends of ferrous and nonferrous metals prior to drawing. The pipe ends can be reduced in a cold or hot state. The maximum outer diameter of the pipes being reduced is 408 mm, the minimum diameter is 80 mm. The new press makes it possible to cut down the length of the pipe end being reduced considerably. The press is composed of a ring-shaped cast steel bed. 8 piston-type cylinders are fitted radially to the inner diameter of the machine bed. The cylinder position on the bed is fixed by pins. Brace wedges are placed between the cylinders. These wedges and two steel face plates combine the bed and cylinders in one rigid structure which forms an inner ring similar to the outer one. A uniform displace-

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S/193/60/000/011/006/022
A004/A001

The П040 (P040) Hydraulic Press for the Reduction of Pipe Ends Prior to Drawing

ment of all pistons, independent from the resistivity of the pipe being reduced, is ensured by a hydraulic servo slide valve. Interchangeable tool segments are fastened to the plungers, the positions of the tool segments being fixed by special spring catches. The working surface of the tools is step-shaped in order to avoid the pipe being pushed from the working zone during the pressing operations. A number of interlocksare provided in the electric circuit of the press which exclude the possibility of the breakage of individual units if the press is not operated in the right way. The press is remote-controlled in the electromagnetic way by push-buttons on the central control panel. The operation cycle of the press is automated or adjustable. For automatic operation the design office of the Plant has developed a blank loading and unloading conveyer which can be connected to the central control panel and electric panel without any alterations of the latter. The eccentricity and ellipticity of the reduced pipe end relative to the non-reduced one does not exceed 5 - 6%. The authors present the following additional technical data: pressing stress - 200 tons; output - 40 pieces/hour; piston stroke of the radial cylinders - 65 mm, speed of piston working stroke - 1.5 mm/sec; speed of piston back stroke - 2 mm/sec; working

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S/193/60/000/011/006/022
A004/A001

The ПО40 (P040) Hydraulic Press for the Reduction of Pipe Ends Prior to Drawing

pressure - 200 kg/cm^2; capacity of main НПМ100 (NPM100) pump - 100 liter/min; capacity of Н400 (N400) control pump - 5 liter/min, total power of pressing installation - 40 kw; height of press axis over floor level - 1,050 mm; overall dimensions: full height - 3,800 mm; height over floor level - 2,925 mm; width - 3,000 mm; length - 3,850 mm; weight - 50 tons. 600,000 rubles were saved after introduction of the new press, while the labor productivity increased by 30 times. There is 1 figure.

Card 3/3

S/182/60/000/012/006/010
A161/A030

AUTHORS: Nayguz, N.I. and Berul', G.M.

TITLE: Tube Swaging Press With Synchronous Slides Motion

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, 1960, No.12, pp. 21-25

TEXT: The Odesskiy zavod pressov (Odessa Press Plant) has designed and produced a П040 (P040) hydraulic press for swaging steel and nonferrous metal tube ends preliminary to drawing through dies. Tubes of 80 to 408 mm in diameter may or may not be heated. The article gives detailed design and operation information. The press eliminates the hot swaging on drop hammers, the swaged (pointed) tube end is shorter, and noise is completely eliminated. The press (Fig.1) is annular, with 8 radial cylinders and a hydraulic oil drive; the work rate is 40 swagings per hour, the press effort 2,000 tons. The cylinders (2) are attached with bolts (3) and fixed with pins; the wedges (4) are tightened at the test with 250 kg/cm^2 pressure and form a rigid system with the cylinders; residual stresses in the circular cast steel frame (1) ensure geometrical stability. The piston cylinders (Fig.2) are easily removable. The hollow cast iron piston (2) is sealed with six

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Tube Swaging Press With Synchronous Slides Motion

piston rings (3) and its travel is limited by the split ring (4) which is retained with the ring (5). The holes (6) closed with plugs (7) are designed for removing the ring (4); the ring (8) is for tight fitting of the bronze guide bushing (9) on the cone (10) that is designed for easy insertion of the piston into the cylinder. The punches are attached to the piston rods and bear columns preventing the pistons from turning in the cylinders and bearing in their turn pushing rods exerting pressure on the racks of a tracing slide valve. Replaceable tool sectors (2), (Fig.3) are attached to the punches (1) and fixed by spring-loaded latches. The contacting surfaces of the sectors are comb-shaped to prevent metal from flowing into interstices. The work surface of the tool is staged to prevent the tube from moving out under pressure. A lever in one of the sectors presses on a microswitch to switch the press on when a tube is installed. A mechanical bed (Fig.4) automatically feeds tubes in and out. It includes a central shaft (1), two drive shafts (2 and 3), drive (4) for discs and drive (5) for rollers, stops and limit switches. The discs with sector-shaped cuts are bearing rollers (8); the rollers are connected with bevel gears (9) engaging with gears (10) on the central shaft. When it rotates, the rollers on the right and left discs rotate in the opposite sense; the left discs are rotated through gears

Tube Swaging Press With Synchronous Slides Motion

(11) by the shaft (3), and the right discs from the shaft(2). The discs must rotate in one sense for moving the tube, and to achieve this both drive shafts are coupled through an auxiliary disc (12). The angle between rollers from left and right is changed by swinging the discs in the opposite sense to accomodate tubes of larger diameter. The gear (13) and lever (14) are designed for this purpose. Stops on the disc (12) actuate limit switches for giving a signal to the automatic control board. A mobile electromagnetic stop (16) and lever system (17) fix the discs. The friction clutch (18) protects the lever system. Even motion of all eight pistons is controlled by a hydraulic synchronizer (Fig.5) with eight swinging bronze bushings (2) fitted to the frame with 0.01 mm gap; gears (3) rigidly coupled with the bushings are engaging with racks (4) with flanges (5) that are joined to the press slides. When the slides move, the racks (4) and gears (3) turn the bushings (2). The valve (6) has a flange (7) with a spiral shank entering the bore in the valve; the pins (8) enter the flutes. Oil feed into the one or the other valve space makes it move (with rotation due to the spiral). It engages by the pin (9) with the gear (10) placed on a needle bearing in a bore in the frame. Gears (12) are rigidly coupled with swing slide valves

Tube Swaging Press With Synchronous Slides Motion

(13) that are rotated by gears(10) and (12). The pressure and drain ducts of the valve (13) communicate through flat slits in the bushings and valves that are matching in two positions that correspond to the work and the return travel of slides. If one of the slides begins to lead, its bushing also begins leading its slide valve, and it closes the slit preventing oil from entering into the leading cylinder. If a cylinder lags, its bushing brakes the valve (13) through the pin (14), and with it the setting mechanism. All other bushings start leading their valves and closing the slits, i.e., the velocity of all other slides is reduced. The hydraulic drive control is automated and either actuated with push buttons (for setting), or with electric impulses (automatic cycle). The hydraulic drive works from a HNM-100 (NPM-100) pump and a H-400 (N-400) eccentric pump. The hydraulic system is illustrated in the diagram (Fig.6). The eccentricity and elliptic inaccuracy of the swaged tube ends does not exceed 5-6% of the punch travel. The work rate is 30 times higher than swaging on drop hammers, and the press cost is amortized in one year. There are 6 figures.

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S/182/60/000/012/006/010
A161/A030

Tube Swaging Press With Synchronous Slides Motion

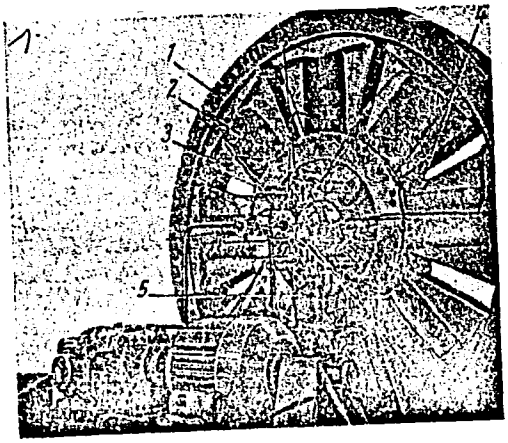

Fig. 1 - The P040 press.

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Tube Swaging Press With Synchronous Slides Motion

S/182/60/000/012/006/010
A161/A030

2

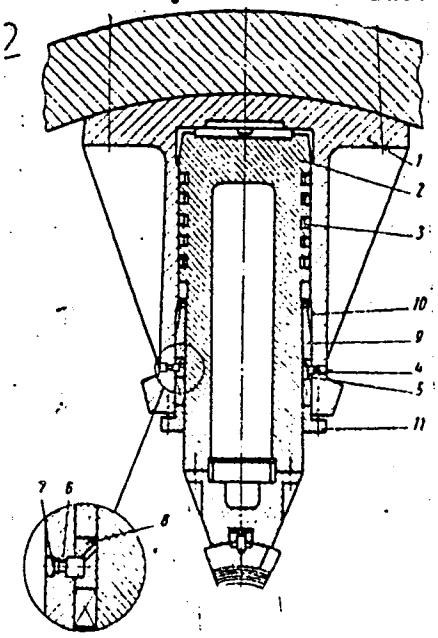

Fig. 2 - A piston cylinder

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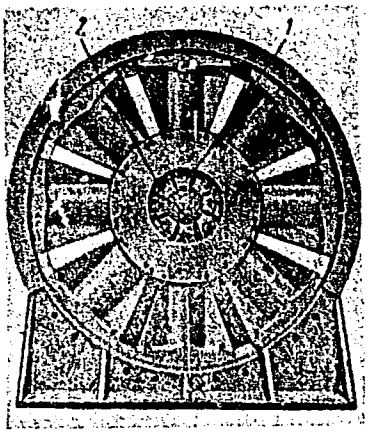
A161/A030

Tube Swaging Press With Synchronous Slides Motion

Fig. 3 - View from the charging side



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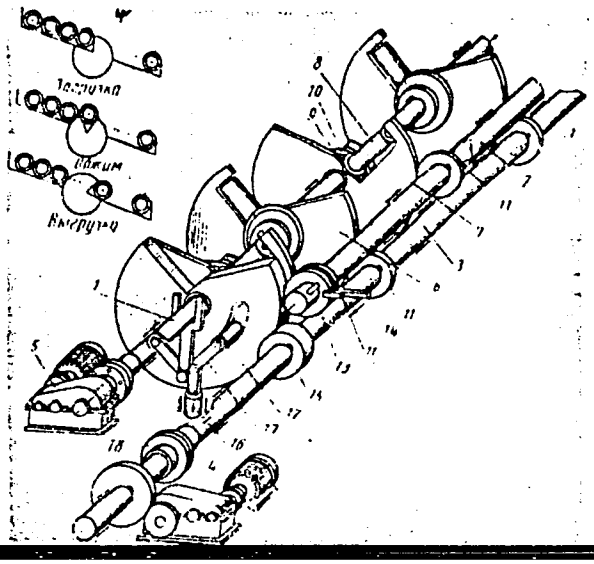
S/182/60/000/012/006/010
A161/A030

Tube Swaging Press With Synchronous Slides Motion

Fig. 4 - Kinematic system of the mechanical bed.
(1) - charging; (2) - swaging;
(3) - removal.

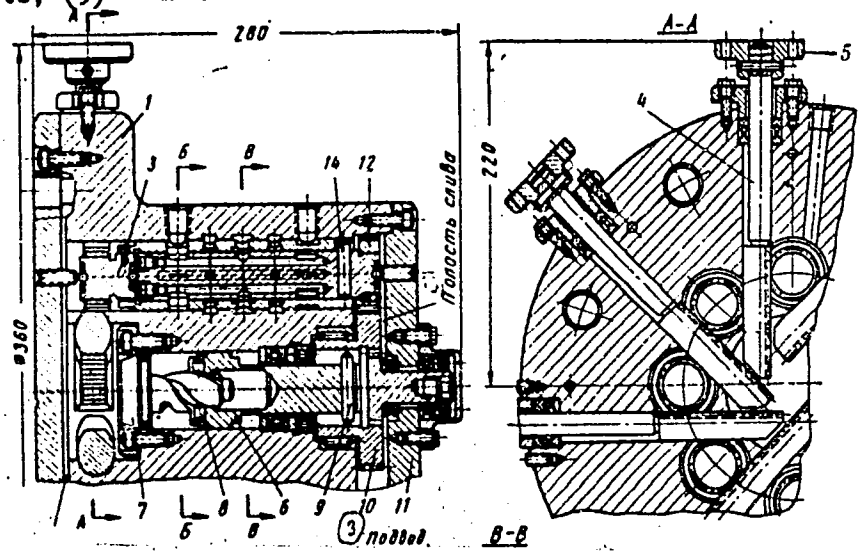


Card 8/12

S/182/60/000/012/006/010
A161/A030

Tube Swaging Press With Synchronous Slides Motion

Fig. 5 - Hydraulic synchronizer. (1) and (2) - Drain space; (3) - feed; (4) cylinder ducts; (5) - drain ducts.

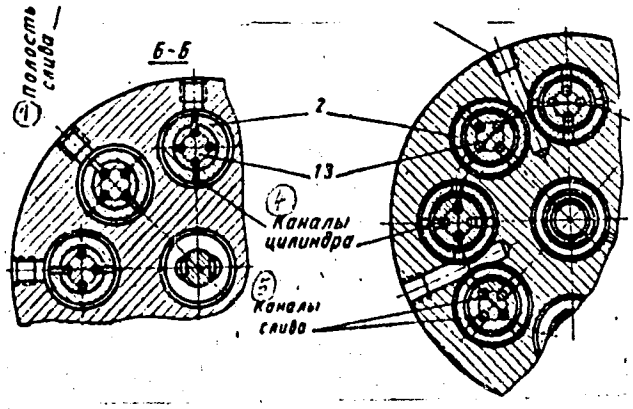


Card 9/12

S/182/60/000/012/006/010
A161/A030

Tube Swaging Press With Synchronous Slides Motion

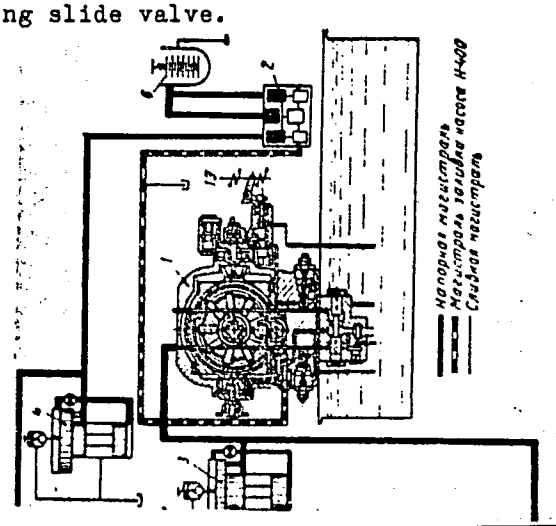
Figure 5 (continued)



Card 10/12

S/182/60/000/012/006/010
Tube Swaging Press With Synchronous Slides Motion A161/A030

Fig. 6 - The hydraulic circuit. 1 - The NPM-100 piston pump with electric control; 2 - the N-400 piston pump; 3 - safety valve with 1 KPM-25 (1KRM-25) by-pass slide valve; 4 - safety valve with 1KP-15 (KR-15) by-pass slide valve; 5 - four-way slide valve controlled from electromagnet; 6 - laminated filter; 7 - tracing slide valve.

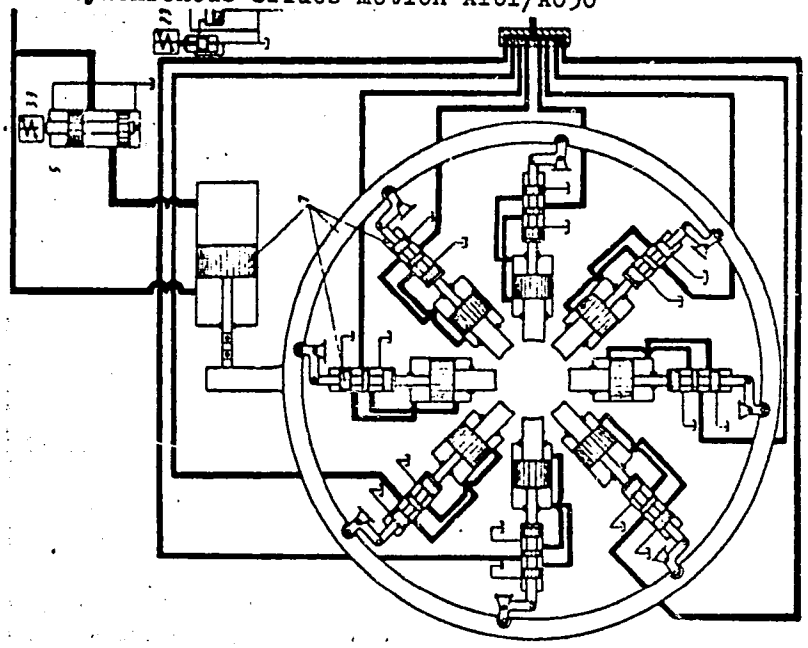


Card 11/12

S/182/60/000/012/006/010
A161/A030

Tube Swaging Press With Synchronous Slides Motion

Figure 6 (continued)



Card 12/12

NAYGUZ, N.I.; BERUL', G.M.; REKHTER, V.Sh.

Three-position automatic presses for the manufacture of coal-graphite products. Kuz.-shtam.proizv. 4 no.8:30-33 Ag '62. (MIRA 15:8)

(Hydraulic presses) (Graphite)

NAYGUZ, N.I.; BERUL', G.M.

Hydraulic, metal-stretching, 1,500-ton press. Kuz.-shtam.proizv. 5 no.2:28-30 F '63. (MIRA 16:2)
(Hydraulic presses)

BERUL', G.M.

Selecting the working pressure for hydraulic presses. Kuz.-shtam. proizv. 4 no.1:26-30 Ja '62. (MIRA 17:3)

BERUL', S.I.; BERGMAN, A.G.

Systems: potassium nitrite - potassium nitrate and potassium nitrite - sodium nitrite. Izv.Sekt.fiz.-khim.anal. 21:172-177 '52. (MLRA 6:7)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova Akademii nauk SSSR. (Systems (Chemistry)) (Nitrates) (Nitrites)

BERUL, S. I.

Interrelation between sodium and potassium nitrates in fusions. A. G. Bergman and S. I. Berul (N. S. Kurnakov Inst. Gen. Inorg. Chem., Acad. Sci. U.S.S.R., Moscow). *Izvest. Sektora Fiz.-Khim. Anal., Inst. Obshchei Neorg. Khim., Akad. Nauk S.S.R.* 21, 178–83(1952).—$NaNO_3$, m. 309°; and KNO_3, m. 337°, were mixed in various molar ratios, fused, cooled while mixed, and annealed for 10–12 hrs. On the various mixts. were detd. the crystn. points and the transformation temps. in the solid state. Heating curves were obtained for some of the fusions. The lowest temp. 222° was observed for a mixt. contg. 50 mol. % $NaNO_3$. The formation and existence of solid solns. in this system is greatly affected by the rate of cooling and the rate of heating.

M. Hosch

BERUL', S. I.

BERUL', S. I. - "Phase Diagram of a Reciprocal System of Nitrates and Nitrates of Potassium and Sodium," Sub 11 Jun 52, Inst of General and Inorganic Chemistry imeni N. S. Kurnakov. (Dissertation for the Degree of Candidate in Chemical Sciences).

SO: Vechernaya Moskva January-December 1952

POLYAKOV, V.D.; BERUL', S.I.

Specific weight of melts of a system composed of sodium and potassium carbonates chlorides. Izv.Sekt.fiz.-khim.anal. 22:170-177 '53. (MLRA 7:5)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova Akademii nauk SSSR. (Carbonates) (Chlorides) (Systems (Chemistry))

BERUL, S.I.

Phase diagram of system sodium nitrate and nitrite. A. G. Bergman, S. I. Berul, and I. N. Nikonova. *Izvest. Sektora Fiz.-Khim. Analiza, Inst. Obshch. i Neorg. Khim. Akad. Nauk S.S.S.R.* 23, 183–8 (1953).—$NaNO_3$ underwent an endothermal transformation at 275–280°. $NaNO_2$ underwent a transformation at 160°, above and below which it exists in 2 distinct cryst. forms. The m. curve of the system $NaNO_3$–$NaNO_2$ consisted of 3 branches: (1) $NaNO_2$, (2) $NaNO_3$–$NaNO_2$, and (3) $NaNO_3$. Within the limits of 0–8 and 67–100% $NaNO_3$ solid solns. were observed. M. Hosch

BERUL S. I.

Triple mutual system of sodium and potassium nitrates and nitrites. S. I. Berul and A. G. Bergman. *Izvest. Sektora Fiz.-Khim. Analiz., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.R.* 25, 218-35(1954).—The fusibility diagram of the mutual system K, $Na \| NO_3, NO_2$ is studied. The field corresponding to compd. $NaNO_3.NaNO_2$ extends deep inside the diagram. The field for compd. $NaNO_3.KNO_3$ is more developed than in the system of nitrates alone; nitrites probably increase the stability and the temp. of formation. Another inner field probably represents a triple compd. whose compn. is expressed approx. by $KNO_3.KNO_2$. An approx. scheme of triangulation of the system is given.

Eurilla Mayerle

POLYAKOV, V.D.; BERUL', S.I.

Specific weight of melts in the system of potassium and sodium nitrates and nitrites. Izv.Sekt.fiz.-khim.anal. 26:164-172 '55. (MLRA 8:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova AN SSSR. (Sodium salts) (Potassium salts) (Specific gravity)

BERUL, S. I.

Thermal stability of low-melting mixtures of nitrites and nitrates of sodium and potassium. N. K. Voskresenskaya and S. I. Berul. *Zhur. Neorg. Khim.* 1, 1867-78(1956). — Expts. were made on the [illegible] fused mixt. of 53% KNO_3, 40% $NaNO_2$ [illegible] 650, and 600° in vessels made of Ag, Fe, Armco and various steels. Pure $NaNO_2$ also was tested in Ag and steel vessels. The heating periods were as long as 1 month. The pure nitrite decompd. more rapidly than did its mixt. with the nitrates. The gaseous product formed was almost pure N_2. The heating of the pure nitrite led to the formation of nitrates in the end product. The difference in the stability of the pure nitrates and nitrites and the mixts. was discussed.

I. Rowlat Leach

AUTHOR: Berul', S. I. SOV/78-3-10-34/35

TITLE: Thermographic Investigation of Potassium Nitrite, Sodium Nitrate and Sodium Nitrite at Low Temperatures (Termograficheskoye issledovaniye pri nizkikh temperaturakh nitrita kaliya, nitrata i nitrita natriya)

PERIODICAL: Zhurnal neorganicheskoy khimii 1958, Vol 3, Nr 10, pp 2427-2429 (USSR)

ABSTRACT: Pure salts of $NaNO_3$, $NaNO_2$ and KNO_2 were thermographically analyzed at temperatures of between -65°C and -100°C. Potassium nitrite was produced by several recrystallizations. The differential thermal analysis and ordinary thermal analysis of $NaNO_3$ in the range of between -148°C and +60°C do not show any thermal effects or transformations. That applies also for $NaNO_2$ in the range of between -145°C and +83°C. The differential and ordinary thermal analysis of KNO_2 show in the range of between -165°C and +35°C two thermal effects at -2°C and +45°C, where polymorphous transformations take place. The existence of two transformations was confirmed by photomicrography. It was made clear by observations that no transformations whatever

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Thermographic Investigation of Potassium Nitrite Sodium Nitrate and Sodium Nitrite at Low Temperatures. SOV/78-3-1o-34/35

take place in $NaNO_2$ and $NaNO_3$ in the temperature range of between -145°C and +80°C. There are 3 figures and 6 references, 3 of which are Soviet.

SUBMITTED: January 3, 1958

Card 2/2

S/078/60/005/03/026/048
B004/B015

AUTHORS: Voskresenskaya, N. K., Berul', S. I.

TITLE: Thermal Stability of the Easily Meltable Mixture of Nitrites and Nitrates of Sodium and Potassium

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol 5, Nr 3, pp 654-659 (USSR)

ABSTRACT: The authors investigated (Ref 1) the behavior of the nitrite-nitrate mixture (40 weight% of $NaNO_2$, 53 weight% of KNO_3, 7 weight% of $NaNO_3$), which is used as a coolant, after 720 hours of heating in various metallic vessels (Ag, Fe or various types of steel) and found that all metals react with the nitrate ions. The present paper reports on seven further experiments, the first of which was carried out in the presence of water vapor, the others, however, under exclusion of water vapor. Vessels made of Armco iron and steel of the types 12MFKh and Kh18N25S2 were investigated. The authors refer to similar experiments carried out by M. I. Ravich and Ye. V. [illegible]aya (Ref 2), as well as to the publications that appeared after [illegible]ned in reference 1. Table 1 shows the analysis of the [illegible]lt. Tables 2-4 give the experimental results.

Table 5 shows the change of the NO_2^- and NO_3^- content, and table 6 the same found in earlier experiments in the presence of water vapor. In all experiments the melt was found to show an increasing nitrate- and a decreasing nitrite content. The experiments carried out in vessels with walls of poor oxidizing properties(oxidizing steel vessel of the type 12MFKh, vessels made of steel of the type Kh18N25S2 with different surface condition) indicated a partial oxidation due to the atmospheric oxygen entering the apparatus. This additional oxidation has, however, no essential influence upon the increase in NO_3^- and the decrease in NO_2^-. A comparison of the results obtained in the course of this investigation with those of reference 1 shows the considerable effect of water vapor. Only in the presence of water vapor nitrates are reduced by metals. The experiment made with the Armco iron vessel with oxidized surface in the presence of water vapor resulted in a considerably smaller decomposition of the nitrate-nitrite mixture than in vessels with clean metallic surface, which again shows the role of metals. The authors refer to Ye. I. Gurovich and G. P. Shtokman (Ref 7). L. A. Domogatskikh took part in the experiments. There [illegible] tables and 7 references, 3 of which are Soviet.

VOSKRESENSKAYA, N.K., doktor khim. nauk; YEVSEYEVA, N.N., kand. khim. nauk; BERUL', S.I.; YERESHCHETINA, I.P.; TRAVIN, N.V., red. izd-va; BLEYKH, E.Yu., tekhn. red.

[Manual on the fusibility of the systems consisting of anhydrous inorganic salts] Spravochnik po plavkosti sistem iz bezvodnykh neorganicheskikh solei. Sost. N.K.Voskresenskaia i dr. Moskva, Vol.1. [Binary systems] Dvoinye sistemy. 1961. 845 p. (MIRA 14:6)

1. Akademiya nauk SSSR. Institut obshchey i neorganicheskoy khimii. 2. Laboratoriya khimii i termodinamiki rasplavlennykh sred Instituta obshchey i neorganicheskoy khimii im. N.S.Kurnakov AN SSSR (for for all except Travin, Bleykh)
(Salts) (Systems (Chemistry))

VOSKRESENSKAYA, N.K.; YEVSEYEVA, N.N.; BERUL', S.I.; VERESHCHETINA, I.P.; TRAVIN, N.V., red. izd-va; BLEYKH, E.Yu., tekhn. red.

[Reference book on the fusibility of systems of anhydrous inorganic salts]Spravochnik po plavkosti sistem iz bezvodnykh neorganicheskikh solei. Sost. N.K.Voskresenskaia i dr. Moskva. Vol.2. [Ternary, ternary reciprocal, and multicomponent systems] Sistemy troinye, troinye vzaimnye i bolee slozhnye. 1961. 585 p. (MIRA 14:7)

1. Akademiya nauk SSSR. Institut obshchey i neorganicheskoy khimii. (Salts) (Systems (Chemistry)) (Melting points)

S/078/62/007/004/009/016
B110/B101

AUTHORS: Voskresenskaya, N. K., Berul', S. I.

TITLE: Conversions of CeO_2, Nd_2O_3, Sm_2O_3 and their interaction with molten lithium- and potassium chlorides and sodium carbonate and sulfate

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 4, 1962, 850-855

TEXT: The interactions of three basic oxides: CeO_2, Nd_2O_3 and Sm_2O_3 with melts of chlorides, carbonates and sulfates were investigated. The heating curves of CeO_2, Nd_2O_3 and Sm_2O_3 and the X-r.. patterns were recorded. The heating curve of untreated CeO_2 shows no deflection. The thermogram of $Nd_2O_3 \cdot 3H_2O$ showed heat effects at (1) 320-330°C, loss of 1.7 molecules $H_2O \longrightarrow NdO \cdot OH$, $(Nd_2O_3 \cdot H_2O)$, (2) 488°C, loss of 0.5 molecules $H_2O \longrightarrow Nd_2O_3 \cdot 0.5H_2O$, (3) 510-545°C, loss of 0.8 molecules $H_2O \longrightarrow \sim Nd_2O_3$. In the thermogram of the sample annealed at 400°C to constancy of weight,

1 is absent, but a new effect appears at 700-765°C. 2 and 3 are shifted toward higher temperatures. An effect existed at 900°C for the sample dehydrated at 700°C, quickly heated to 1000°C and cooled again to room temperature. The X-ray patterns of samples cooled in air from (a) 700°C and (b) 1000°C, showed many lines corresponding to B-Nd_2O_3 (M. W. Shafer, R. Roy, see below) for a, and such corresponding to A-Nd_2O_3 for b. Lines corresponding to NdO·OH also appeared in a and b. In Sm_2O_3 there appeared: (1) an exothermal effect at 215-310°C, which corresponds to the transition from the amorphous into the crystalline state, (2) an endothermal one at 400-450°C and (3) an endothermal one at 615°C. In samples cooled from 500-600°C and 1000°C, B-Sm_2O_3 and SmO·OH were found. The rare earth oxides were isothermally saturated with salt melts at 800-1100°C in an electric furnace. The amount of cerium in the liquid phase was determined colorimetrically according to Westwood and Mayer (see below). When heating CeO_2 for 4 hrs at 900 and 1000°C with KCl, only Ce traces enter the liquid phase; at 1100°C 0.0010% by weight Ce (0.0012% by weight CeO_2). Presumably the reaction proceeds as follows: $2\ CeO_2 = Ce_2O_3 + O$,

Conversions of CeO_2, Nd_2O_3, ... S/078/62/007/004/009/016
B110/B101

$Ce_2O_3 + 6\ KCl = 2\ CeCl_3 + 3\ K_2O$. Isothermal dissolving of CeO_2 in LiCl for 3 hrs at 1000°C resulted in 0.00030% by weight Ce (0.00036% by weight CeO_2) in the liquid phase. In KCl- and NaCl melts about 0.3 mole Nd_2O_3/100 mole and in LiCl melt ~0.2 mole Nd_2O_3/100 mole salt entered the liquid phase. Since Nd_2O_3 dissociates into five ions in dilute solutions, the values for KCl and NaCl are < 0.06 mole Nd_2O_3, for LiCl < 0.04 mole Nd_2O_3, which corresponds to < 0.3% by weight Nd_2O_3. Sm_2O_3 did not enter the liquid phase at all. A crushed mixture of Na_2CO_3 and CeO_2, corresponding to the composition Na_2Ce_3 was heated for 4, 24, 72 and 120 hrs at 800, 900, 1000, and 1100°C. Only in samples heated for 72 and 120 hrs at 1100°C, three very weak new lines appeared. When heating CeO_2 with Na_2SO_4 for 5 hrs at 1000 and 1100°, 0.198-0.200% Ce were determined colorimetrically and 0.036-0.38% by weight oxygen ions by titration. The bottom phases showed three to four very weak new lines. When heating for 5 hrs at 1100°C, no interaction was found between Na_2SO_4 and Sm_2O_3. V. G.

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Conversions of CeO_2, Nd_2O_3, ...

S/078/62/007/004/009/016
B110/B101

Kuznetsov is thanked for his advice. There are 4 figures and 1 table. The most important English-language references are: M. W. Shafer, R. Roy, J. Amer. Ceram. Soc., 42, 503 (1959). W. Westwood, A. Mayer, Analyst., 73, 275 (1948).

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR (Institute of General and Inorganic Chemistry of the Academy of Sciences USSR)

SUBMITTED: May 9, 1961

Card 4/4

BERUL', S.I., kand.khimicheskikh nauk; PEVNITSKAYA, M.V., inzh.

Constitutional diagram of the system $SnCl_2$ - NH_4Cl. Sbor. trud. TSNIICHM no.28:178-182 '62. (MIRA 15:11)
(Systems (Chemistry)) (Phase rule and equilibrium)

L 10650-63
EFF(c)/EWP(q)/EWT(m)/BDS--AFFTC/ASD--Pr-4--WH/JW/JD

ACCESSION NR: AP3001221 S/0078/63/008/006/1431/1436

AUTHOR: Berul', S. I.; Voskresenskaya, N. K. 64 62

TITLE: Reaction of CeO sub 2, Nd sub 2 O sub 3 and Sm sub 2 O sub 3 with fused fluorides 27 27

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 6, 1963, 1431-1436

TOPIC TAGS: fused fluorides, CeO sub 2, Nd sub 2 O sub 3, Sm sub 2 O sub 3, cryolite systems, liquidus

ABSTRACT: It was found through the isometric saturation method that 0.1 weight % Ce or 0.7-0.8 weight % Sm (based on weight of melt) was converted in a molten eutectic mixture of NaF-KF (40 and 60 mol %; 716 degrees) in 4 hours at 1000-1100 degrees. The liquidus of cryolite (Na sub 3 AlF sub 4)-CeO sub 2 and of cryolite - Sm sub 2 O sub 3 systems, obtained visually, was at a temperature higher than was necessary from the heat curves. The eutectics (from diagrams based on heat curves) were 880 degrees, 5.5 mol % CeO sub 2; 963 degrees, 1.2 mol % Sm sub 2 O sub 3. Liquidus of the cryolite - Nd sub 2 O sub 3 system, obtained visually, showed a eutectic at 904 degrees for 12 mol % Nd sub 2 O sub 3. 22 mol % of CeO sub 2 dissolved in a eutectic mixture of cryolite - NaF, lowering fusion temperature to 798 degrees. Roentgenograms of the melts showed only the starting materials; only
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L 10650-63
ACCESSION NR: AP3001221

2

in several Sm sub 2 O sub 3 melts were there new weak lines. Heat curves of unfused mixtures of cryolite - Sm sub 2 O sub 3 indicated an endothermic reaction between components. "Spectral determination was carried out by V. L. Ginzburg. The participation of T. I. Khranin in carrying out the work is acknowledged." Orig. art. has: 4 tables and 4 figures.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova. Akademii nauk SSSR (Institute of General and Inorganic Chemistry, Academy of Sciences SSSR)

SUBMITTED: 11Aug62 DATE ACQD: 01Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 006 OTHER: 003

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Card 2/2

L 52060-65 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG

ACCESSION NR: AP5012968 UR/0078/65/010/005/1110/1120

AUTHOR: Berul', S. I.; Voskresenskaya, N. K.

TITLE: Reactions of sodium metaphosphate with oxides of cerium, neodymium, and samarium

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 5, 1965, 1110-1120

TOPIC TAGS: rare earth, rare earth compound, eutectic, chemical reaction

ABSTRACT: The authors studied the reactions of fused metaphosphates with rare earth oxides (particularly Ce_2O_3, formed by the reaction with CeO_2) because these oxides are heat-resistant, relatively inert toward the crucible material (platinum) and air, and permit prolonged experiments in which equilibrium phases can be expected to form. In the CeO_2-$NaPO_3$ system, the following compounds containing trivalent cerium are formed: an Na-Ce diphosphate having the formula $Na_6Ce_2(P_2O_7)_3$, and the basic monophosphate $(CePO_4)_2 \cdot Na_2O$. The IR spectra show that the first compound does not contain the P_2O_7 ion, and that the second does not contain the PO_4^{3-} ion. Ce^{3+} ion probably enters into the complex anions. The composition corresponding to the

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ACCESSION NR: AP5012968 2

monophosphate $Na_3PO_4 \cdot 2CePO_4$ disproportionates into a basic Na-Ce monophosphate and (as shown by the refractive indices) into a diphosphate or (according to the IR spectra) into compounds containing the $P_2O_7^{4-}$ ion. The liquidus diagram of the CeO_2 - $NaPO_3$ system has a short segment of $NaPO_3$ separated by a eutectic (at a content of 0.3 mol % CeO_2) from the unstable segment of CeO_2 or by another eutectic from the more stable segment of the Na-Ce diphosphate, which continues at least to the point corresponding to the composition of this compound (see fig. 1 of the Enclosure). The Na-Ce diphosphate melts slightly above 700°C, forming a viscous liquid; the basic Na-Ce monophosphate melts at about 1600°C. Two analogous compounds were detected in the $NaPO_3$ - Nd_2O_3 system, and a compound analogous to the Na-Ce diphosphate was observed in the $NaPO_3$ - Sm_2O_3 system. "T. I. Khranina participated in the experiments." Orig. art. has: 5 figures and 4 tables.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry, Academy of Sciences, SSSR)

SUBMITTED: 31Oct63 ENCL: 01 SUB CODE: IC,GC

NO REF SOV: 012 OTHER: 008

L 52060-65

ACCESSION NR: AP5012968 ENCLOSURE: 01

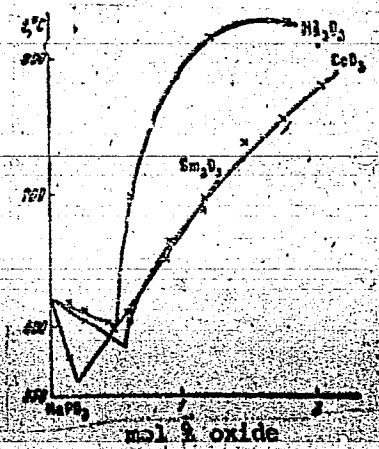


Fig. 1. Liquidus of the $NaPO_3$-CeO_2, $NaPO_3$-Nd_2O_3, and $NaPO_3$-Sm_2O_3 system based on visual observations.

Card 3/3

L 13320-66 EWP(e)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG/WH

ACC NR: AP6003373 SOURCE CODE: UR/0363/66/002/001/0165/0168

52
B

AUTHOR: Tananayev, I. V.; Belyakov, I. M.; Dzhurinskiy, B. F.; Berul', S. I.

ORG: Institute of General and Inorganic Chemistry im. N. S. Kurnakov, Academy of Sciences, SSSR (Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR)

TITLE: Reactions of neodymium and cerium oxides with sodium borate melts

55 27 27

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 1, 1966, 165-168

TOPIC TAGS: rare earth, neodymium, oxide, cerium ~~oxide~~, borate, borate glass, neodymium glass, ~~neodymium borate~~, single crystal growing, crystallization, single crystal

ABSTRACT: Reactions in the liquid phase have been studied in the $Na_2O-B_2O_3-Nd_2O_3$ and $Na_2O-B_2O_3-CeO_2$ systems under isothermal and polythermal conditions to obtain data on solubility of the rare earths in sodium borate melts and crystallization of the rare earth element borates. These data are required for growing single crystals of rare earth element borates and for preparing glasses activated with rare-earth element ions. Solubility of Nd_2O_3 and CeO_2 was determined at

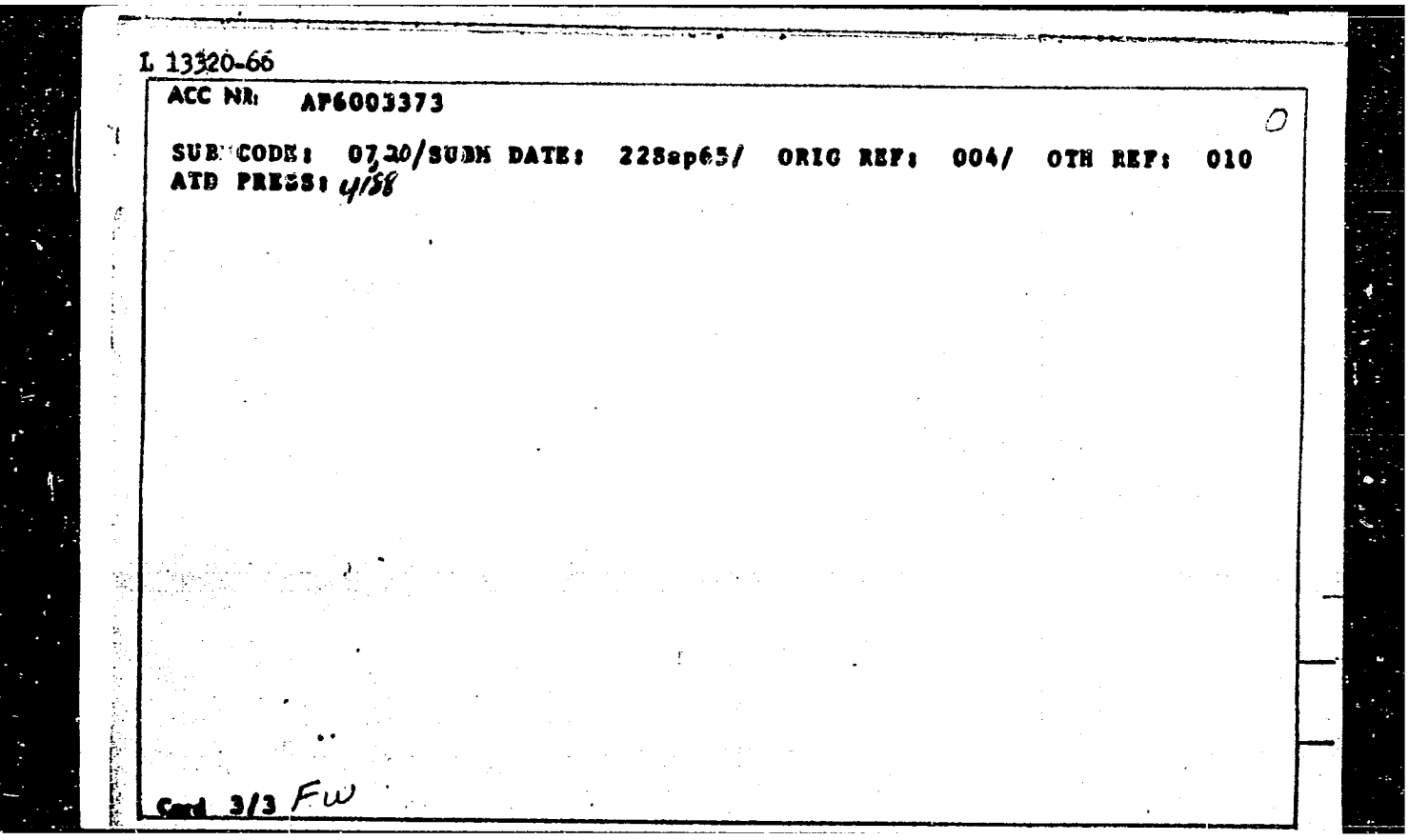
15,44

Card 1/2 UDC: 553.637

900 and 1000C in the melts containing B_2O_3 and Na_2O in a ratio of from 2:1 to 17:1. This region of compositions was selected as practically the most important from the viewpoint of glass formation. It was noted that the behavior of Nd_2O_3 and CeO_2 in these melts differed. The solubility of Nd_2O_3 was significantly higher than that of CeO_2 because of the formation of neodymium borates, $NdBO_3$ and $Nd(BO_2)_3$, which crystallize in the 2—3.72 and 3.72—17 B_2O_3/Na_2O range, respectively. CeO_2 apparently does not form any compound and its solubility is only slightly dependent on the composition of melts. The great solubility of Nd_2O_3 in the Na_2O-B_2O_3 melts made it possible to grow $NdBO_3$ acicular single crystals up to several millimeters in size. Such crystals were grown by slow cooling of the borax melt saturated with Nd_2O_3 at 1000C. Liquidus curves of the $Na_2B_4O_7$-Nd_2O_3 section and $Na_2B_4O_7$-CeO_2 section of the phase diagrams were established for both systems studied. The liquidus branch of the $Na_2B_4O_7$-Nd_2O_3 system in the 690—1000C range, and the branch of the $Na_2B_4O_7$-CaO_2 system in the 740—1100C range corresponded to $NdBO_3$ and CeO_2 crystallization, both without any polymorphic conversion. Transition points on the liquidus curves at 910C for $Na_2B_4O_7$-Nd_2O_3 and 930C for $Na_2B_4O_7$-CeO_2 systems were attributed to some structural changes in the polymeric $Na_2B_4O_7$ melt.

[JK]

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205110001-1"



L 13320-66

ACC NR: AP6003373

SUB CODE: 07,20/SUBM DATE: 22Sep65/ ORIG REF: 004/ OTH REF: 010
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Card 3/3 FW

L 16743-66 EWT(m)/EWP(t) IJP(c) JD

ACC NR: AP6003639 SOURCE CODE: UR/0078/65/010/010/2329/2332

AUTHOR: Berul', S. I.; Kryukova, A. I.

28
B

ORG: none

TITLE: Fusibility in calcium tungstate and LiCl, NaCl, KCl systems

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 10, 1965, 2329-2332

TOPIC TAGS: tungstate, calcium compound, lithium chloride, sodium chloride, potassium chloride, phase diagram

ABSTRACT: Melting point diagrams of $CaWO_4$-LiCl (NaCl, KCl) systems were studied visually up to 5-11 mol % $CaWO_4$ and thermographically up to 95 mol % $CaWO_4$ at 1100°C and the liquidus curves were obtained. In the $CaWO_4$-LiCl system, the eutectic corresponds to 3 mol % $CaWO_4$ and 590°C and no chemical compounds or solid solutions are formed up to 95 mol % $CaWO_4$. In the $CaWO_4$-NaCl system, the eutectic corresponds to 1.5 mol % $CaWO_4$ and 796°C; a eutectic line up to 95 mol % $CaWO_4$ was confirmed. In the $CaWO_4$-KCl system, the eutectic corresponds to 2.3 mol % $CaWO_4$ and 758°C. The eutectic line extends almost up the ordinate of $CaWO_4$. The heating curves show that in these systems, at contents up

UDC: 541.123+546.32/.34'131+546.786'41

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ACC NR: AP6003639

to 95 mol % $CaWO_4$, the solid phases consist of the original components. $CaWO_4$ has a transition at 1085°C. Orig. art. has: 4 figures, 3 tables.

SUB CODE: 07/ SUBM DATE: 11Apr64/ ORIG REF: 004/ OTH REF: 001

Card 2/2 vmb

31756
S/058/61/000/011/009/025
A058/A101

5.5450

AUTHORS: Berulava, B.G., Sanadze, T.I.

TITLE: Paramagnetic resonance of uranium and terbium

PERIODICAL: Referativnyy zhurnal. Fizika, no. 11, 1961, 130, abstract 11V266 (V sb. "Paramagnitn. rezonans". Kazan', Kazansk. un-t, 1960, 11 - 13)

TEXT: The electron paramagnetic resonance of U^{3+} impurities in a $BaFe_2$ single crystal and Tb^{3+} impurities in a $CaFe_2$ single crystal was studied at 10°-$20^{\circ}K$. Impurity concentration amounted to 10^{-4}%. Measurements were carried out at 8970 and 9870 Mcps in parallel fields. In the case of U^{3+} there were observed in the $BaFe_2$ lattice 3 lines due to the presence in the lattice of three nonequivalent U^{3+} ion groups. The following values were obtained for the components of the g factor: $g_{\parallel} = 3.337 \pm 0.002$; $g_{\perp} = 2.115 \pm 0.001$. In the case of Tb^{3+} there were observed in the $CaFe_2$ lattice 12 lines due to two causes: presence of three nonequivalent Tb^{3+} ion groups, and presence in Tb^{159} of nuclear spin $I = 3/2$. The electron paramagnetic resonance spectrum is described by the spin Hamiltonian $\hat{H} = g_{\parallel} \beta S_z H_z + A S_z I_z + \Delta_x S_x + \Delta_y S_y$ (β is the Bohr magneton, S_x, S_y and S_z

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Paramagnetic resonance of uranium and terbium

are the electron spin components and S = 1/2) with the following values of constants: $g_{\parallel} = 17.8 \pm 0.1$; $A = 0.209 \pm 0.001$ cm^{-1} and $\Delta = (\Delta_x^2 + \Delta_y^2)^{1/2} = 0.173 \pm 0.001$ cm^{-1}.

[Abstracter's note: Complete translation]

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L 34 75-65 EWT(1)/EEC(t)/EEC(b)-2 Pi-4 IJP(c)

ACCESSION NR: AP5005315 S/0181/65/007/002/0640/0642

AUTHOR: Berulava, B. G.; Sanadze, T. I.; Khakhanashvili, O. G.

TITLE: Relaxation processes in paramagnetic resonance of U^{3+} and Tb^{3+} in CaF_2

SOURCE: Fizika tverdogo tela, v. 7, no. 2, 1965, 640-642

TOPIC TAGS: spin lattice relaxation, relaxation time, electron paramagnetic resonance, uranium, terbium, fluorite

ABSTRACT: The authors investigated the spin lattice relaxation of the ions U^{3+} and Tb^{3+} in the temperature range 1.5—15K. The measurements were made by the method of pulsed saturation at 9,370 Mcs. The impurity concentrations were 0.2, 0.05, and 0.12% in the case of U^{3+} and 0.005 and 0.05% in the case of the Tb^{3+}. Only single crystals in which the impurity ions were only in tetragonal surrounding were chosen for the investigation. The relaxation times ranged in the interval 10^{-4} — 10 sec. They were measured with the magnetic field parallel and perpendicular to the symmetry z-axis for the U^{3+} ions. For the Tb^{3+} ions, the relaxation processes were investigated only in parallel orientation. The temperature dependences of the relaxation times are given by formulas of the type

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